



NOTES

NON TUBERCULOUS MYCOBACTERIUM

MICROBE OVERVIEW

- Pleomorphic acid-fast bacillus; usually rod-shaped
- Thick waxy coating
- Obligate intracellular microorganism
- Optimal growing conditions: cool temperatures (27–33°C/80.6–91.4°F), aerobic environment
- Proliferates slowly; cannot be cultivated in vitro
- Appearance: red; Ziehl–Neelsen stain

MYCOBACTERIUM LEPRAE

osms.it/mycobacterium-leprae

PATHOLOGY & CAUSES

- Primarily infects skin, superficial nerves, upper respiratory tract mucosa, eyes
- Chronic infection: leprosy; AKA Hansen's disease
- Targets Schwann cells → nerve damage → sensation loss → repeated injuries, infections → gradual destruction of extremities
- Infiltration of skin, cutaneous nerves → hypopigmented skin lesions

Ridley-Jopling classification

- Tuberculoid
 - ↑ cell-mediated immunity response
 - AKA paucibacillary (↓ mycobacteria)
- Lepromatous
 - ↓ cell-mediated immunity response
 - AKA multibacillary (↑ mycobacteria)
- Broad disease spectrum
 - Borderline tuberculoid, mid-borderline, borderline lepromatous, indeterminate

RISK FACTORS

- Close contact with infected individuals (esp. in areas of poverty), armadillos (enzootic in *Dasypus novemcinctus*)
- Older age, genetic factors, immunosuppression

COMPLICATIONS

- Lifelong neuropathy → severe disfigurement, disability
- Severe ophthalmic injury → vision loss
- Social stigma (falsely believed contagious)

SIGNS & SYMPTOMS

- Can be asymptomatic for years
- ↓ sensation
 - Glove, stocking pattern → repeated painless injuries
- Hypopigmented/reddish skin lesions, heal spontaneously
 - Tuberculoid: rare, well-demarcated
 - Lepromatous: numerous, poorly demarcated

VISIT...

LANZAROTE
Caliente.COM

- Nodular swelling (face, earlobes)
- Body hair loss (esp. eyebrows, eyelashes)
- Tender, thickened peripheral nerves
- Ocular involvement
 - Chronic uveitis (common)
 - Facial nerve paralysis (lagophthalmos) → corneal exposure, dry eye → corneal ulceration
- Late stages
 - Claw fingers, toes
 - Foot droop (inability to lift front of foot); peroneal nerve infiltration
 - Nasal septum destruction → nose collapse (saddle nose)

DIAGNOSIS

LAB RESULTS

- Skin biopsy of active lesion
 - Mycobacteria in cutaneous nerve
- Polymerase chain reaction (PCR)
 - *M. leprae* DNA in tissues

OTHER DIAGNOSTICS

- Clinical examination



Figure 83.3 Skin changes on the chest of an individual infected with *Mycobacterium leprae*.



Figure 83.1 A skin lesion on the scalp of an individual with leprosy.



Figure 83.2 The hands of an individual with leprosy. The distal portions of almost all the digits, aside from one, have been lost.

TREATMENT

MEDICATIONS

- Multidrug therapy to prevent resistance
 - **Tuberculoid:** dapsone, rifampicin; six months
 - **Lepromatous:** dapsone, rifampicin, clofazimine; 12 months

OTHER INTERVENTIONS

- Bacillus Calmette–Guérin (BCG) vaccination
 - Administered at birth in regions with increased leprosy rates (e.g. Brazil, India, Indonesia)